

CLAIMS

1 1. A fully end to end IP enabled wireless mobile network wherein each of a plurality of
2 mobile hosts has an associated permanent IP address, and wherein a dynamic IP address space is
3 used to address the mobile hosts in order to facilitate mobility management, comprising:

4 a plurality of base stations communicatively coupled with each other via a back bone,
5 each of said base stations having an associated coverage area, and being associated with a
6 portion of the dynamic IP address space, and also being capable of wireless communication with
7 associated local mobile hosts located within said associated coverage area, and being operative to
8 allocate dynamic IP addresses from said associated portion of said dynamic IP address space for
9 corresponding ones of said associated local mobile hosts.

1 2. A fully end to end IP enabled wireless mobile network as recited in claim 1 wherein each
2 of said base stations is further operative to receive first packets via said back bone, each of said
3 first packets carrying a dynamic IP address of an associated destination one of said associated
4 local mobile hosts, each of said base stations being operative to translate said dynamic IP
5 addresses carried by said first packets to the permanent IP addresses of said associated
6 destination mobile hosts.

1 3. A fully end to end IP enabled wireless mobile network as recited in claim 2 wherein each
2 of said base stations is further operative to receive second packets from said associated local
3 mobile hosts via wireless links, each of said second packets carrying a destination permanent IP
4 address of an associated destination one of the mobile hosts, each of said base stations being
5 further operative to translate said destination permanent IP addresses carried by said second
6 packets to current dynamic IP addresses of said associated destination mobile hosts.

1 4. A fully end to end IP enabled wireless mobile network as recited in claim 3 further
2 comprising a gateway for communicatively coupling said backbone of said wireless mobile
3 network with a wire lined IP network, said gateway for receiving third packets via the wire lined
4 IP network, each of said third packets carrying a permanent IP address of an associated
5 destination one of the mobile hosts, said gateway being operative to translate said permanent IP

6 addresses carried by said third packets to current dynamic IP addresses of said associated
7 destination mobile hosts.

1 5. A fully end to end IP enabled wireless mobile network as recited in claim 3 wherein each
2 of said base stations is operative to translate between permanent IP addresses and dynamic IP
3 addresses by accessing a distributed cache storing mapping information.

1 6. A fully end to end IP enabled wireless mobile network as recited in claim 3 wherein each
2 of said base stations is further operative to store associated mapping information including said
3 permanent IP addresses and said dynamic IP addresses associated with each said local mobile
4 host located within said associated coverage area.

1 7. A fully end to end IP enabled wireless mobile network as recited in claim 4 wherein said
2 gateway is operative to store mapping information including said permanent IP addresses and
3 said dynamic IP addresses associated with each of said mobile hosts located within said wireless
4 mobile network.

1 8. A fully end to end IP enabled wireless mobile network as recited in claim 6 wherein each
2 of said base stations is further operative to transmit said associated mapping information to each
3 other one of said base stations and to said gateway via said backbone in accordance with a
4 distributed cache protocol.

1 9. A fully end to end IP enabled wireless mobile network as recited in claim 8 wherein said
2 gateway is responsive to said mapping information transmitted by each of said base stations, and
3 operative to store said mapping information.

1 10. A fully end to end IP enabled wireless mobile network as recited in claim 4 wherein said
2 gateway is operative to advertise said permanent IP addresses of each of said mobile hosts to
3 nodes of the wire lined IP network as prefixes served by said gateway.

1 11. A fully end to end IP enabled wireless mobile network comprising a plurality of base
2 stations coupled together via a backbone, each of said base stations having an associated
3 coverage area, and being operative to communicate with a plurality of mobile hosts located
4 within said associated coverage area, each of said mobile hosts having an associated permanent
5 IP address, each of said base stations also being operative to allocate a dynamic IP address for
6 each of said mobile hosts located within said associated coverage area.

1 12. A fully end to end IP enabled wireless mobile network as recited in claim 11 wherein the
2 dynamic IP addresses are allocated from a dynamic IP address space, and wherein each of said
3 base stations is associated with a portion of said dynamic IP address space, each of said base
4 stations being operative to allocate said dynamic IP addresses from said associated portion of
5 said dynamic IP address space.

1 13. A fully end to end IP enabled wireless mobile network as recited in claim 12 wherein
2 each of said base stations is further operative to receive first packets via said back bone, each of
3 said first packets carrying a dynamic IP address of an associated destination one of said
4 associated local mobile hosts, each of said base stations being operative to translate said dynamic
5 IP addresses carried by said first packets to the permanent IP addresses of said associated
6 destination mobile hosts.

1 14. A fully end to end IP enabled wireless mobile network as recited in claim 13 wherein
2 each of said base stations is further operative to receive second packets from said associated
3 local mobile hosts via wireless links, each of said second packets carrying a destination
4 permanent IP address of an associated destination one of the mobile hosts, each of said base
5 stations being further operative to translate said destination permanent IP addresses carried by
6 said second packets to current dynamic IP addresses of said associated destination mobile hosts.

1 15. A fully end to end IP enabled wireless mobile network as recited in claim 14 further
2 comprising a gateway for communicatively coupling said backbone of said wireless mobile
3 network with a wire lined IP network, said gateway for receiving third packets via the wire lined
4 IP network, each of said third packets carrying a permanent IP address of an associated

5 destination one of the mobile hosts, said gateway being operative to translate said permanent IP
6 addresses carried by said third packets to current dynamic IP addresses of said associated
7 destination mobile hosts.

1 16. A fully end to end IP enabled network wherein each of a plurality of mobile hosts has an
2 associated permanent IP address, and wherein a dynamic IP address space is used to address the
3 mobile hosts in order to facilitate mobility management, comprising:

4 a wireless mobile network including a plurality of base stations communicatively
5 coupled with each other via a back bone of said mobile network, each of said base stations
6 having an associated coverage area, and being associated with a portion of the dynamic IP
7 address space, and also being capable of wireless communication with associated local mobile
8 hosts located within said associated coverage area, and being operative to allocate dynamic IP
9 addresses from said associated portion of said dynamic IP address space for selected ones of said
10 associated local mobile hosts, each of said base stations being further operative to receive first
11 packets via said back bone, each of said first packets including a destination IP address field
12 carrying a dynamic IP address of an associated destination one of said associated local mobile
13 hosts, each of said base stations being operative to translate said dynamic IP addresses of said
14 associated destination mobile hosts to the permanent IP addresses of said associated destination
15 mobile hosts, each of said base stations being further operative to receive second packets from
16 mobile hosts via wireless links, each of said second packets including a destination IP address
17 field carrying a destination permanent IP address of an associated destination one of the mobile
18 hosts, each of said base stations being further operative to translate said destination permanent IP
19 addresses of said destination mobile hosts to current dynamic IP addresses of said associated
20 destination mobile hosts; and

21 a gateway for communicatively coupling said backbone of said wireless mobile network
22 with a wire lined IP network, said gateway for receiving third packets via the wire lined IP
23 network, each of said third packets including a destination IP address field carrying a permanent
24 IP address of an associated destination one of the mobile hosts, said gateway being operative to
25 translate said permanent IP addresses of said associated destination mobile hosts to current
26 dynamic IP addresses of said associated destination mobile hosts.

1 17. A fully end to end IP enabled network as recited in claim 16 wherein said selected
2 associated local mobile hosts are determined by an authentication procedure.

1 18. A fully end to end IP enabled network as recited in claim 17 wherein each of said base
2 stations is further operative to store associated mapping information including said permanent IP
3 addresses and said dynamic IP addresses associated with each of said mobile hosts located within
4 said associated coverage area.

1 19. A fully end to end IP enabled network as recited in claim 18 wherein each of said base
2 stations is further operative to transmit said associated mapping information to each other one of
3 said base stations and to said gateway via said backbone in accordance with a distributed cache
4 protocol.

1 20. A fully end to end IP enabled network as recited in claim 19 wherein said gateway is
2 responsive to said mapping information transmitted by each of said base stations, and wherein
3 said gateway is operative to store said mapping information.

1 21. A fully end to end IP enabled network as recited in claim 16 wherein:
2 a target one of said local mobile hosts is initially located in a first coverage area
3 associated with a first one of said base stations;
4 said first base station stores first mapping information indicating a mapping between a
5 permanent IP address of said target host and a first dynamic IP address of said target host;
6 said target host moves from said first coverage area to a second coverage area associated
7 with said second base station;
8 said first and second base stations are operative to exchange messages upon a handoff
9 that occurs when said target host moves from said first coverage area to said second coverage
10 area;
11 said second base station is operative to create and store second mapping information
12 indicating a mapping between said permanent IP address of said target host and a second
13 dynamic IP address of said target host;

14 said second base station is operative to pass said second mapping information to said first
15 base station;

16 said first base station is operative to reserve said first dynamic IP address for a period of
17 time;

18 said first base station is responsive to a packet destined for said target host and carrying
19 said first dynamic IP address, and operative to translate said first dynamic IP address to said
20 second dynamic IP address, and to forward said packet to said second base station.

1 22. A fully end to end IP enabled network as recited in claim 16 wherein said network is a
2 heterogeneous network further including at least one stationary wire lined host.

1 23. A fully end to end IP enabled network as recited in claim 16 wherein said dynamic IP
2 address space overlaps at least a portion of an address space comprising the permanent IP
3 addresses.

1 24. A fully end to end IP enabled network as recited in claim 16 wherein said dynamic IP
2 address space is a separate reserved address space having no overlap with an address space
3 comprising the permanent IP addresses.